

Title (en)

METHOD FOR MANUFACTURING NUCLEAR FUEL ZIRCONIUM PART BY USING MULTI-STAGE HOT-ROLLING

Title (de)

VERFAHREN ZUR HERSTELLUNG VON ZIRKONIUMTEILEN VON KERNBRENNSTÄBEN MITTELS MEHRSTUFIGEN WARMWALZENS

Title (fr)

PROCÉDÉ DE FABRICATION D'UNE PIÈCE DE ZIRCONIUM DE COMBUSTIBLE NUCLÉAIRE AU MOYEN D'UN LAMINAGE À CHAUD À ÉTAGES MULTIPLES

Publication

**EP 3241920 B1 20200304 (EN)**

Application

**EP 16882803 A 20160129**

Priority

- KR 20160009933 A 20160127
- KR 2016000967 W 20160129

Abstract (en)

[origin: EP3241920A1] Disclosed is a method of manufacturing a zirconium alloy component wherein precipitates having an average size of 35 nm or less are uniformly distributed in a matrix through multi-pass hot rolling, the method including forming an ingot of a niobium-containing zirconium alloy (step 1); subjecting the ingot obtained in step 1 to annealing at a zirconium beta-phase temperature and then rapid cooling (step 2); preheating the ingot rapidly cooled in step 2 before hot rolling (step 3); forming a multi-pass hot-rolled plate by performing primary hot rolling and then air cooling during which secondary hot rolling is subsequently conducted, immediately after the preheating in step 3 (step 4); subjecting the multi-pass hot-rolled plate obtained in step 4 to primary intermediate annealing and then primary cold rolling (step 5); subjecting the rolled plate, having undergone the primary cold rolling in step 5, to secondary intermediate annealing and then secondary cold rolling (step 6); subjecting the rolled plate, having undergone the secondary cold rolling in step 6, to tertiary intermediate annealing and then tertiary cold rolling (step 7); and subjecting the rolled plate, having undergone the tertiary cold rolling in step 7, to final annealing (step 8). The zirconium alloy plate manufactured in this way enables the formation of fine precipitates in the matrix, thus improving corrosion resistance under high-temperature water vapor conditions and increasing resistance to fatigue failure.

IPC 8 full level

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CPC (source: EP US)

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